

REMARKS

I. STATUS OF THE CLAIMS

In accordance with the foregoing, claims 1-9 are pending and under consideration.

II. ENTRY OF RESPONSE UNDER 37 C.F.R. §1.116

Applicants request entry of this Rule 116 Response and Request for Reconsideration because applicant's response does not significantly alter the scope of the claims and places the application at least into a better form for appeal. No new features or new issues are being raised.

The Manual of Patent Examining Procedures sets forth in §714.12 that "[a]ny amendment that would place the case either in condition for allowance or in better form for appeal may be entered." (emphasis added). Moreover, §714.13 sets forth that "[t]he Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

III. REJECTIONS UNDER 35 U.S.C. 103(a)

Claims 1-3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pavidis (U.S. Patent 6370,260) in view of O'Meara (U.S. Patent 3,544,771).

Applicants respectfully assert that the Office Action, again, fails to appreciate the distinguishing features recited in the embodiment of claim 1. In particular, a first image pickup step using wavelengths in a **visible light region**, and a second image pickup step using wavelengths in an **infrared region**.

More specifically, neither Pavidis nor O'Meara, individually or combined, describe, teach, or suggest at least:

a first image pickup step to pick up an image of an object positioned in front of a background using wavelengths in a **visible light region**. (claim 1, emphasis added).

The Office Action incorrectly cites Pavidis col. 4, lines 16-19 as describing the above mentioned feature (see Office Action pg. 4, item 2, first bullet point, emphasis added).

When referring to the relevant cite in Pavidis, the Office Action states:

where camera 11 of figure 1 uses near-infrared spectrum at the lower band range from **0.8 to 1.4 microns** using the camera as should use as an image intensifier. (Office Action pg. 4, item 2, first bullet point, emphasis added).

A range of 0.8 to 1.4 microns describes a *near-infrared* spectrum, but not a *visible light* spectrum (the visible light spectrum is from 0.4 to 0.7 microns¹). Therefore, Pavidis does not describe "a first image pickup step to pick up an image of an object positioned in front of a background using wavelengths in a **visible light region**" as recited by claim 1.

In addition, neither Pavidis nor O'Meara, individually or combined, describe, teach, or suggest at least using two different regions of the electromagnetic spectrum to extract an image. Pavidis merely describes utilizing the infrared spectrum (see col. 2, lines 41-44) and O'Meara merely describes using only one form of electromagnetic radiation directed to a medium (see col. 31-32). In contrast, the embodiment in claim 1 recites "a first image pickup... using wavelengths in a visible light region; [and] a second image pickup step to pick up... using wavelengths in an infrared region."

It should also be noted that the *current* Office Action states that Pavidis describes a "first light spectrum," despite the fact that the *first* Office Action and claim 1 recite a "visible light region" (see first Office Action pg. 2, item 2, first bullet point).

In light of the Office Action citing a "first light spectrum" and stating that "utilizing the lamp in O'Meara to replace the infrared illuminator in Pavidis, figure 1- 14" (see Office Action pg. 5, lines 8-9), it seems that the Office Action concedes that Pavidis does not describe a "visible light region." The Office Action, however, seems to assert that by replacing the infrared illuminator in Pavidis with the lamp in O'Meara, the deficiency of Pavidis is cured (see *Id.*).

Replacing the infrared illuminator with the lamp in O'Meara does not cure the deficiency of Pavidis. Pavidis teaches that the cameras (items 11 and 12 in Fig. 1) are sensitive to strictly the infrared spectrum and not the visible light spectrum (see col. 2, lines 41-43). Assuming *arguendo*, that Pavidis teaches one camera as being sensitive to "a first light" spectrum, and a second camera being sensitive to "a second light" spectrum, Pavidis teaches away² from one of the cameras being sensitive to the visible light spectrum (i.e. 0.4 microns to 0.7 microns).

¹ See http://en.wikipedia.org/wiki/Visible_light - Visible light spectrum 400nm to 700nm = 0.4 microns to 0.7 microns

² See *KSR International Co. v. Teleflex Inc.* "The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." citing *United States v. Adams*, 383 U. S. 39, 40 (1966).

The “teaching away” assertion is supported by the description in Pavidis which recites “[t]he present invention utilizes radiation in the middle region of the EM spectrum regarded as the infrared spectrum” to detect humans (col. 2, lines 41-43). In describing the significance of using only the infrared band, Pavidis describes “the human body maintains a relatively constant temperature of about 37 degrees Celsius (C), irrespective of physical characteristics or illumination conditions....[t]his consistency is lacking in the visible spectrum.... a sensor functioning in the thermal region is operational day and night without any need for an external illumination source” (col 2, lines 54-65).

In other words, Pavidis strictly teaches using only the infrared spectrum in order to overcome the limitations of detecting humans using the visible light spectrum (e.g. detection during night). Therefore, it would not be obvious to a person of ordinary skill in the art to replace the infrared illuminator in Pavidis with the lamp (i.e. visible light illuminator) in O'Meara because Pavidis teaches away from using the visible light spectrum to detect a human. Moreover, replacing the infrared illuminator in Pavidis with the lamp in O'Meara would produce a non-functional result because the cameras in Pavidis would not be able to detect anything because they are sensitive to only the infrared light spectrum.

Therefore, neither Pavidis nor O'Meara, individually or combined, describe, teach, or suggest “a first image pickup step to pick up an image of an object positioned in front of a background using wavelengths in a **visible light region**” as recited by claim 1 (emphasis added).

Moreover, the teachings of Pavidis are fundamentally different than the embodiment described in claim 1. Pavidis captures an image with a first camera using near-infrared spectrum and captures the same image with a second camera using an infrared spectrum. Pavidis then fuses the two images using a weighted difference combination to thereby intensify the contrast of the image. (see col. 4, lines 31-46). A segmentation technique is then used to distinguish the skin of a face from the background. The face is then extracted from the fused image. To fuse the images, however, it is necessary to align the images of the two cameras, particularly having the imaged ranges matching. If the ranges do not match, the faces in the two images will not correspond.

More specifically, Pavidis recites:

The image outputs 15 and 16 of cameras 11 and 12, respectively, go to a weighted difference software process 17 or specialized hardware that fuses the outputs by performing weighted subtraction of the intensities of the two camera images. This weighted difference software or hardware may be referred to as a

fuser. (col. 4, lines 31-38).

The above-mentioned process is not required in the embodiment of claim 1, which recites "a first image pickup... of an object positioned in front of a background using wavelengths in a visible light region; [and] a second image pickup... of the object positioned in front of the background using wavelengths in an infrared region."

Accordingly, claim 1 patentably distinguishes over the cited art for the above mentioned reasons. Dependent claims 2 and 3 inherit the patentable recitation of their base claim, and therefore, are patentable over the cited art for at least the above mentioned reasons.

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pavidis (U.S. Patent 6370,260) in view of O'Meara (U.S. Patent 3,544,771) as applied to claim 1 in view of Gaynor (U.S. Patent 3,434,835).

Gaynor fails to cure the deficiencies of Pavidis and O'Meara described above. Accordingly, claim 4, which inherits the patentable recitation of its base claim, is therefore patentable over the cited art for at least the above mentioned reasons.

Claims 5-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pavidis (U.S. Patent 6370,260) in view of Okazaki (U.S. Patent 6,873,713) and O'Meara (U.S. Patent 3,544,771).

Claim 5 recites "An authentication apparatus, comprising: a first image pickup section to pick up an image of an object positioned in front of a background using wavelengths in a visible light region."

Okazaki fails to cure the deficiencies of Pavidis and O'Meara described above. Accordingly, claim 5 patentably distinguishes over the cited art. Dependent claims 6-8 inherit the patentable recitation of their base claim, and therefore, are patentable over the cited art for at least the above mentioned reasons.

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pavidis (U.S. Patent 6370,260), Okazaki (U.S. Patent 6,873,713) and O'Meara (U.S. Patent 3,544,771) as applied to claim 5 in view of Gaynor (U.S. Patent 3,434,835).

Neither, Okazaki nor Gaynor, individually or combined, cure the deficiencies of Pavidis and O'Meara described above. Accordingly, claim 9, which inherits the patentable recitation of its base claim, is therefore patentable over the cited art for at least the above mentioned reasons.

V. CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.


Respectfully submitted,

STAAS & HALSEY LLP

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9/4/17

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